



Montana DNRC Forestry Division

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Forest Pest Management

*Helping to Detect and Manage
Damaging Insects and Diseases on
Montana's Forests*



Montana Department of Natural Resources and Conservation Forestry Division Forestry Assistance Bureau Forest Pest Management

The Montana DNRC Forest Pest Management (FPM) Program provides services and management tools to help reduce the impacts of insects and diseases on Montana's state, private, and urban forests. The FPM Program takes a multifaceted approach to managing forest pests that includes education, outreach, and technical assistance for natural resource managers and private landowners; detection and monitoring of forest pests; prevention and restoration activities; and research.

The FPM Program is staffed by an entomologist and part-time pathologist. DNRC Service Foresters also assist in carrying out program activities. With the support of federal funding and in cooperation with the USDA Forest Service Northern Region Forest Health Protection Program, FPM Program staff:

- Diagnose forest health issues on private lands and provide management recommendations
- Offer workshops to train forest professionals, loggers, and landowners in pest identification and management
- Detect and monitor insects and diseases that threaten state, private, and urban forests
- Provide financial assistance for insect and disease prevention and restoration activities
- Coordinate suppression projects
- Provide input to DNRC's long-term timber sale planning process
- Publish information on insect and disease outbreaks and trends in the annual *Montana Forest Insect and Disease Conditions Report*.

Goal

Assist state and private entities with management of insect and disease issues on their forested lands.

Many Montana Forests Are Highly Susceptible to Outbreaks of Forest Pests

Trees in many of Montana's forests are unhealthy because of overcrowding resulting from decades of fire suppression, stress caused by prolonged drought, and some have also been damaged by recent wildfires. These unhealthy trees are more susceptible to attack by insects and diseases. Bark beetles and root diseases are two pests currently affecting Montana forests at outbreak levels. The damage and mortality caused by bark beetles is apparent to anyone who has seen areas of the rusty red trees killed by beetles. The effects of root disease are not as readily apparent, but actually are a greater cause of mortality and injury to trees in Montana. While these outbreaks can't be stopped, it is possible to manage timber losses, manage individual stands to enhance vigor and resilience, and reduce fire hazards to landowners. The FPM Program encourages management practices that enhance trees' resilience to insect and disease activity and help minimize losses to Montana forest resources.

Accomplishments FY 2006

Natural resource managers and private landowners receiving training through workshops and presentations	251
On-site assists to private landowners	21
Millions of acres aerially mapped for insect and disease conditions	29.7
Grant funding administered	\$200,000



Areas of Mountain Pine Beetle Infestations, 2005



Map produced by the USDA Forest Service from survey data collected by USDA Forest Service Northern Region Forest Health Protection Program and DNRC Forest Pest Management Program.



Small insects can cause big problems: The mountain pine beetle (above left; actual size 1/8 - 1/3 inch) can erupt in outbreaks and cause injury and mortality of affected trees. The spruce budworm (larva, above right; actual size up to 1 inch) is a defoliator that can also erupt in outbreaks and cause injury and mortality of trees.



Forest with tree mortality caused by mountain pine beetles.

Consequences of Insects and Diseases for Montana's Forests

Some forest pests, like bark beetles, are natural parts of the forest ecosystem. Infestations have occurred throughout the history of Western forests, since pest activity occurs even in healthy forests. Other insects and diseases, like gypsy moths and white pine blister rust (pictured opposite), are exotic, meaning that they originated outside the U.S. and were accidentally transported here. Because native species did not evolve in the presence of the exotics, their normal defenses often are insufficient to ward off the new pests. A number of pine species are susceptible to white pine blister rust, including whitebark pines, whose seeds are an important food source for grizzly bears, Clark's nutcrackers, and other species. The blister rust often kills the trees from the top down, meaning that the capacity for seed production is lost before the tree dies. The impacts of blister rust infestation thus are not limited just to the pines, but ripple throughout their ecosystem.

The current unhealthy condition of many forests raises the likelihood that outbreaks, even of native insects and diseases, will increase in duration and geographic extent. Pests such as bark beetles usually kill trees quickly, while others such as spruce budworms injure and weaken trees, increasing their susceptibility to other insects and diseases, and reducing their ability to withstand stresses such as drought. Injured trees grow more slowly, resulting in reduced timber production. The dry, dead trees left behind when insects and diseases kill trees are more likely to ignite during wildfires, increasing the severity of fires and increasing risks for residents in the wildland urban interface.



A pine displaying the fruiting bodies of white pine blister rust, a non-native fungus.

Services Provided by the Forest Pest Management Program

Education and Outreach

The FPM Program conducts insect and disease workshops for private landowners, natural resource managers, loggers, and others. Additional educational materials include brochures and information on the program's website. Information and findings from detection surveys are disseminated to appropriate users and published in the annual *Montana Forest Insect and Disease Conditions Report*.

Technical Assistance and Service Calls

FPM Program staff respond to inquiries about forest insect and diseases by on-site visits or phone to help identify forest pests and provide management information.



During an insect and diseases workshop, participants learn to identify pests, methods to help prevent and manage insect and disease infestations, and approaches to restoring areas damaged by infestations.

Prevention and Restoration

The FPM Program administers federally-funded grants used to support prevention and restoration projects on state and private lands, and is a cooperator in projects involving coordination among diverse ownership entities.

Detection and Monitoring

Working in conjunction with the USDA, the FPM Program monitors gypsy moth infestations, Douglas-fir tussock moth infestations, and invasive and threatening species. The FPM Program also works with the USDA to prepare response plans for pests such as the emerald ash borer.

Applied Research

The FPM Program is involved in applied research on several topics in conjunction with the USDA Forest Service and universities. Areas of research include methods for managing white pine blister rust, larch dwarf mistletoe, and Douglas-fir beetles.

A FPM Program Success Story: Improving Forest Health in Lake County

Like forests in many parts of Montana, those in Lake County have been significantly altered by fire suppression and harvest activities during the last 100 years. Densely crowded young Douglas-fir trees in the forest understory are highly susceptible to attack by Douglas-fir beetles, as are many mature Douglas-firs. The dense stands of ponderosa pines that have grown up in the absence of fire are highly susceptible to mountain pine beetles. Over 1,600 acres of forest in Lake County are currently affected by Douglas-fir beetles, and over 15,000 acres are affected by mountain pine beetles.



Above: A forestry consultant points out a tree killed by mountain pine beetles.

Below: Area of Douglas-firs being thinned to reduce susceptibility to beetle attack.



With the assistance of funding from the USDA Forest Service State and Private Forestry Program, the FPM Program is working with private forest owners to conduct management activities that will alter stands from a state of high susceptibility to beetle invasion to conditions where insect activity is reduced and individual trees are more resilient to invasion. Methods include thinning, planting early successional species such as larch and ponderosa pine, slash treatment, and use of pheromone capsules to help protect selected Douglas-fir stands from attack.

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